

# Groundwater Radon Anomalous Decrease Before the 2003 Chengkung Earthquake in Eastern Taiwan

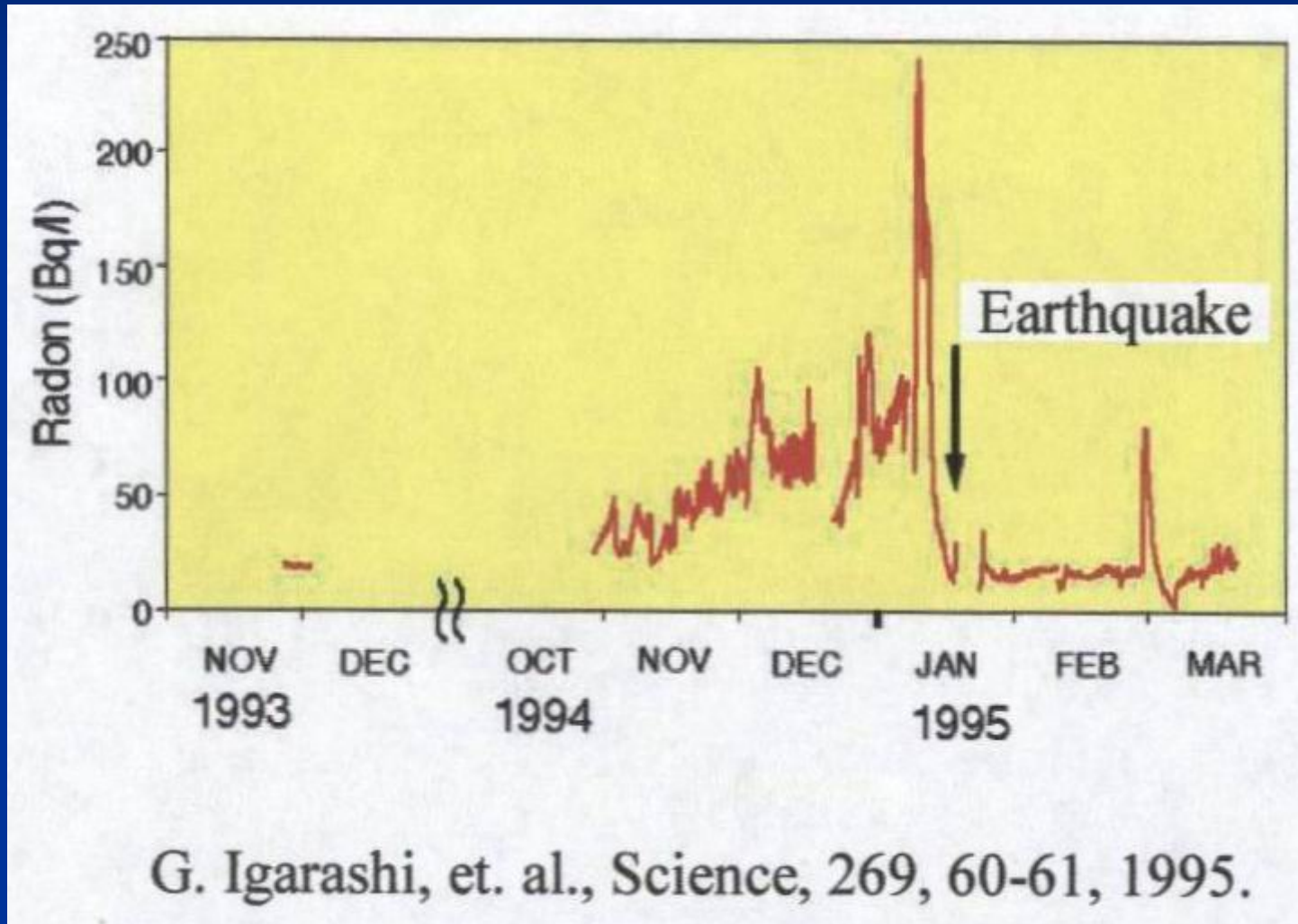
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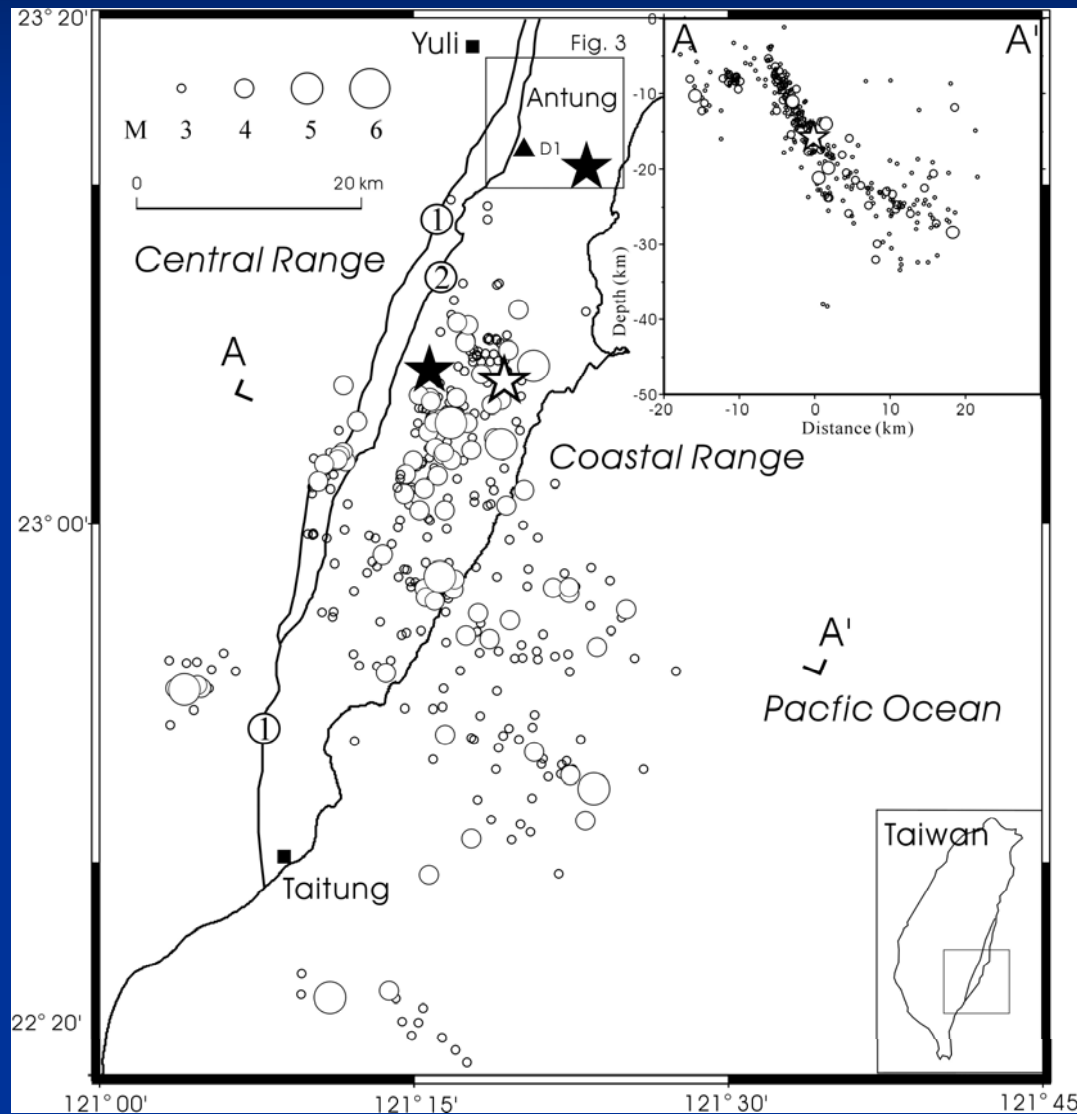
2 Central Weather Bureau, Taipei, Taiwan

3 Water Resources Agency, Ministry of Economic Affairs, Taipei, Taiwan

# Radon concentration anomaly before the 1995 Kobe earthquake



# Epicentral and hypocentral distributions of the 2003 Chengkung earthquake.



① Chihshang Fault.

② Yongfeng Fault.

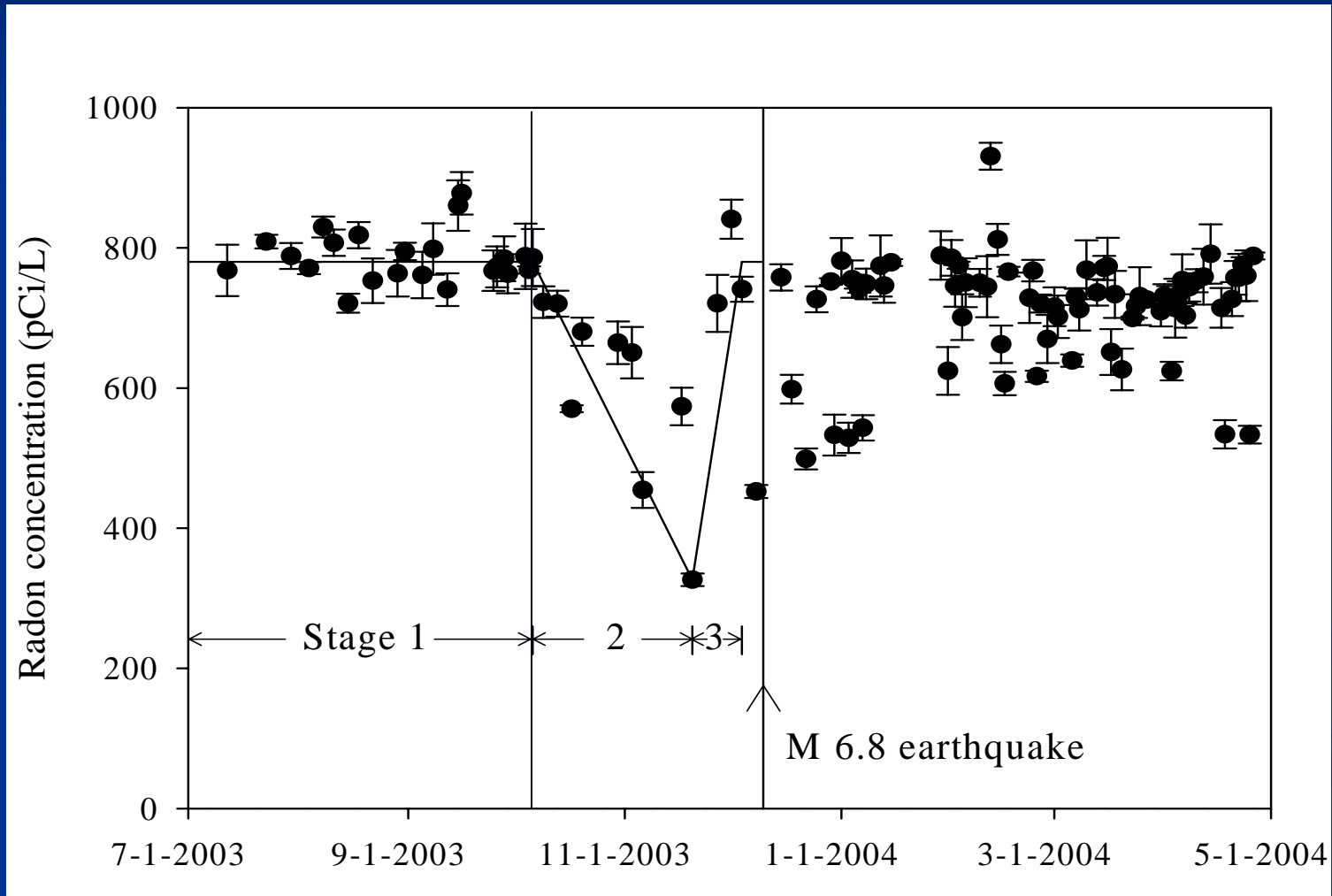
- The 2003 Chengkung earthquake of magnitude (M) 6.8 on December 10, 2003 was the strongest earthquake near the Chengkung area in eastern Taiwan since 1951.

- The Antung radon-monitoring station was located 20 km from the epicenter.

- Approximately 65 days prior to the 2003 Chengkung earthquake, precursory changes in the groundwater's radon concentration were observed.

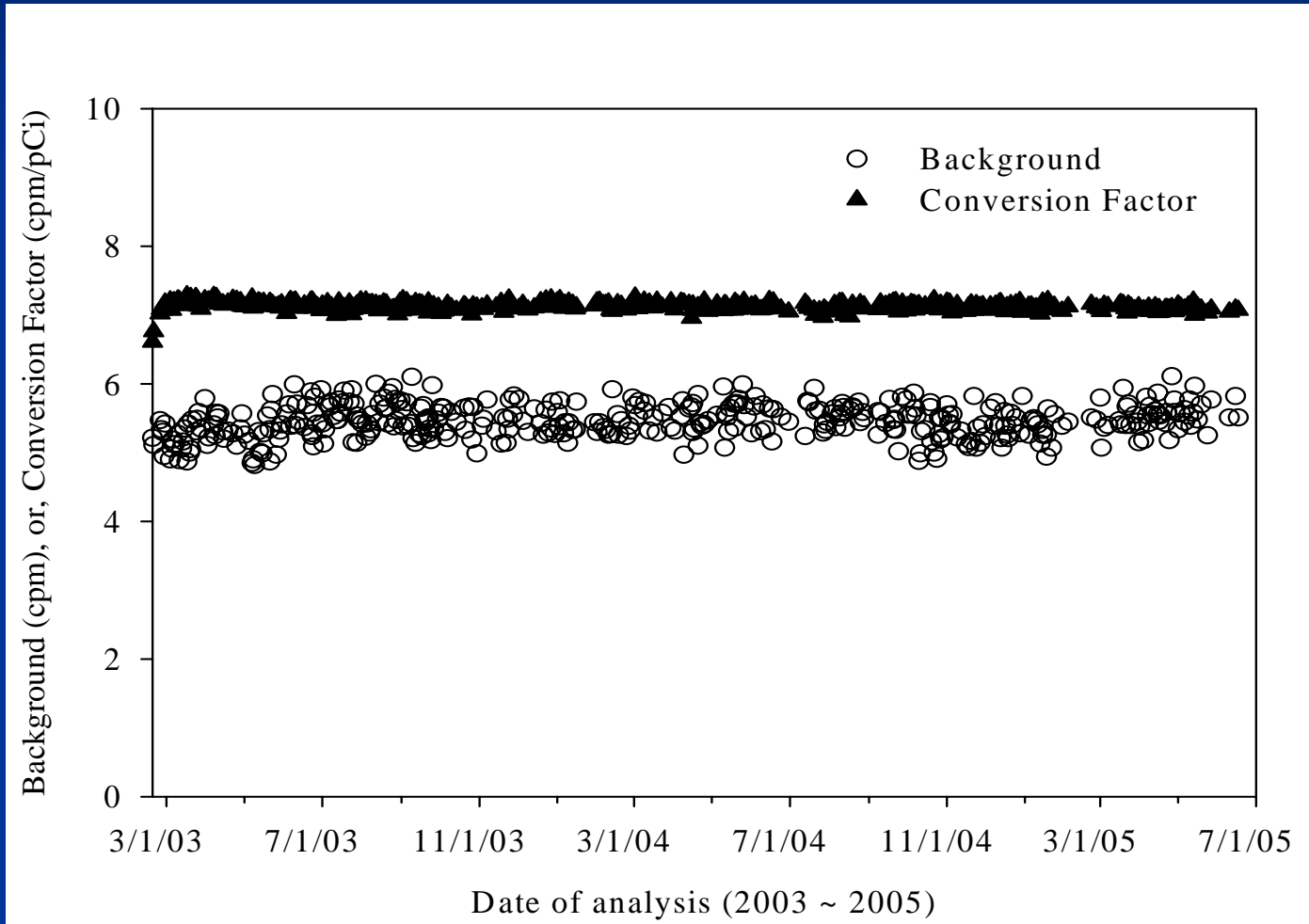
- The radon anomaly was a decrease from a background level of 780 pCi/L to a minimum of 330 pCi/L.

# Radon concentration anomaly before the 2003 Chengkung earthquake

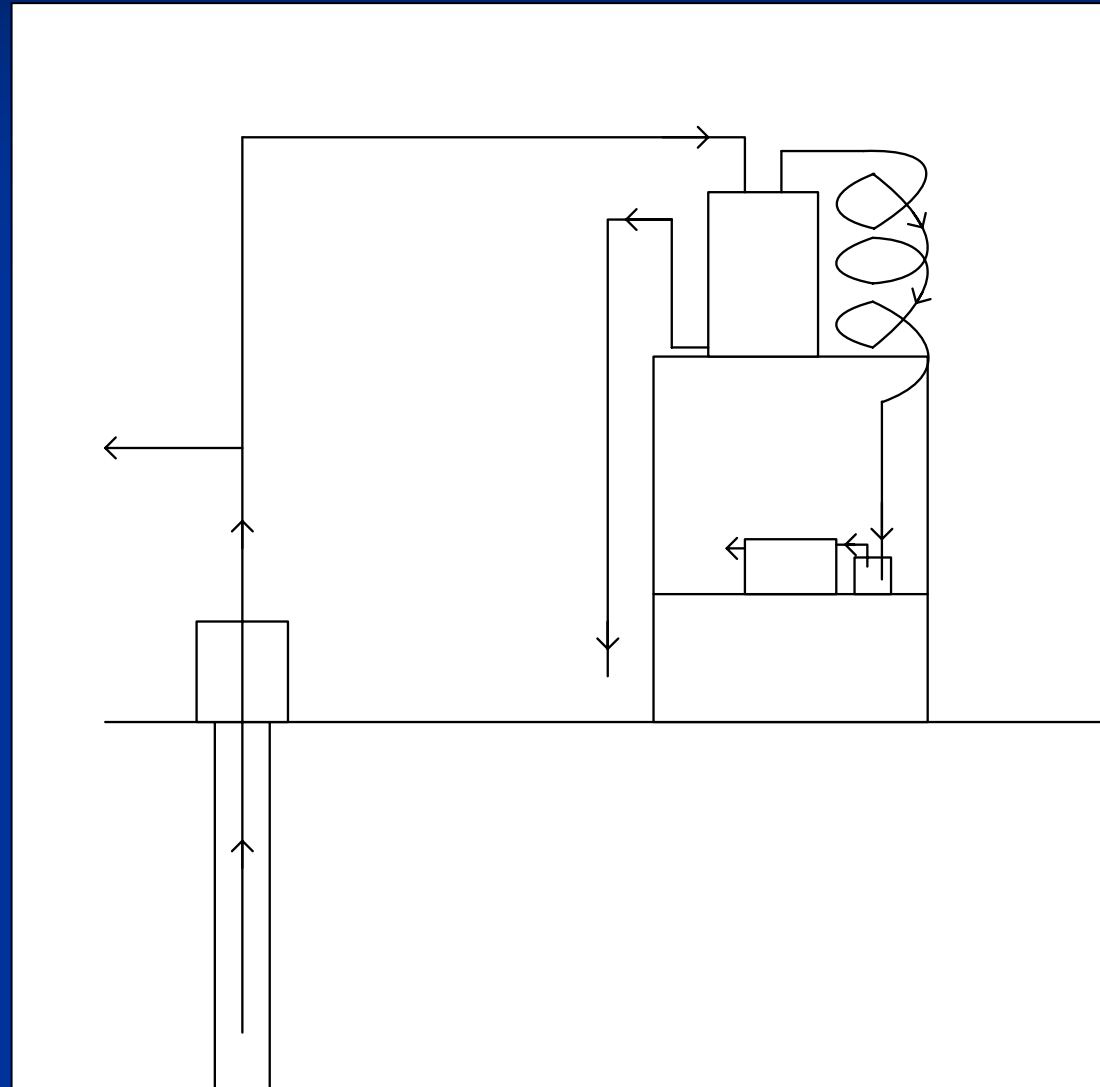




# Calibration factor and background for the LSC measurements in this study



# Antung continuous radon monitoring station



水進

液面

往

# Antung continuous radon monitoring station



中研院水氣分離器



溫泉井

# Antung continuous radon monitoring station



中研院水氣分離器進出流

# Antung continuous radon monitoring station

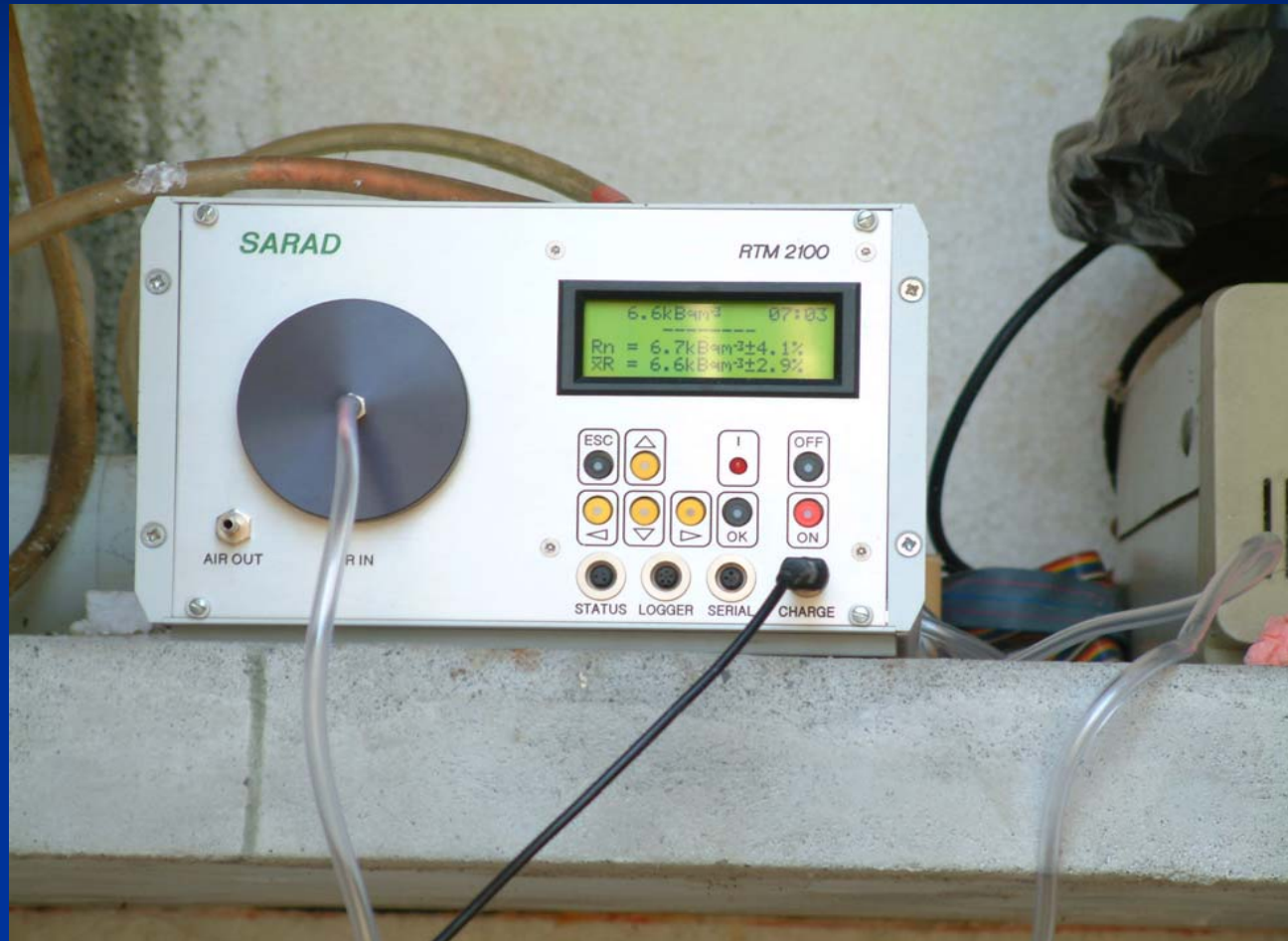


氣氡出流水蒸汽冷凝管



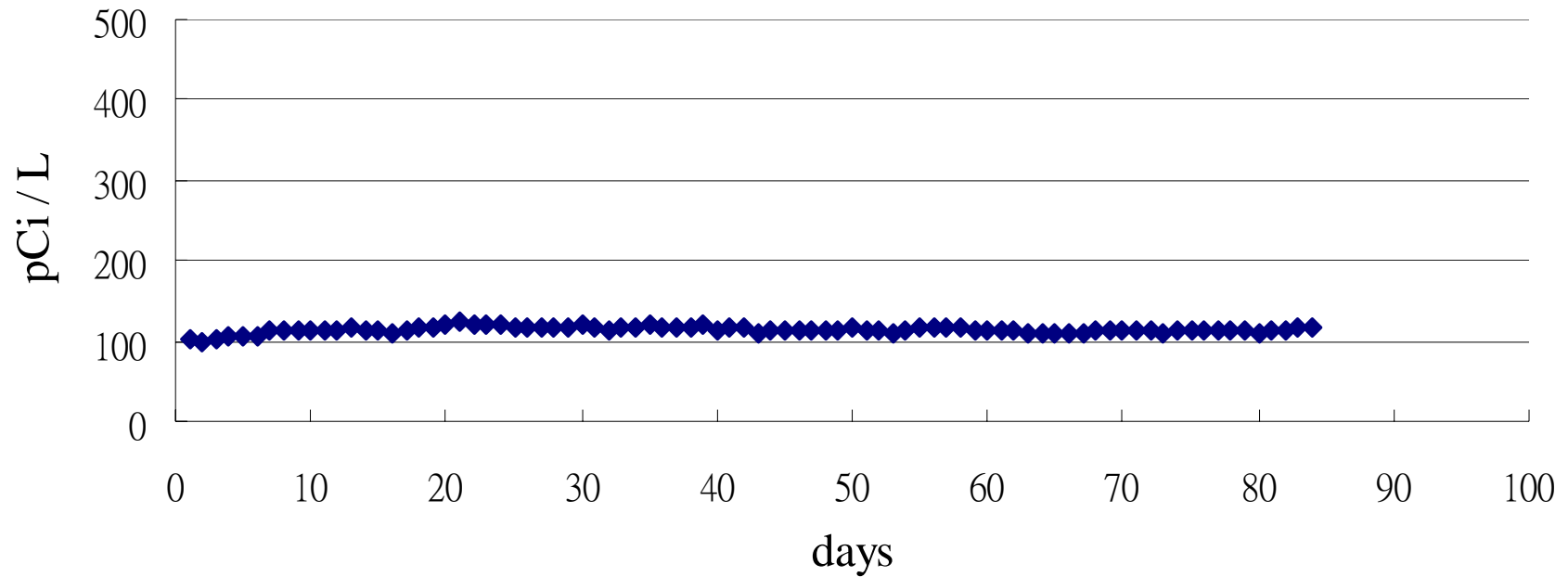
冷凝水補捉瓶

# Antung continuous radon monitoring station

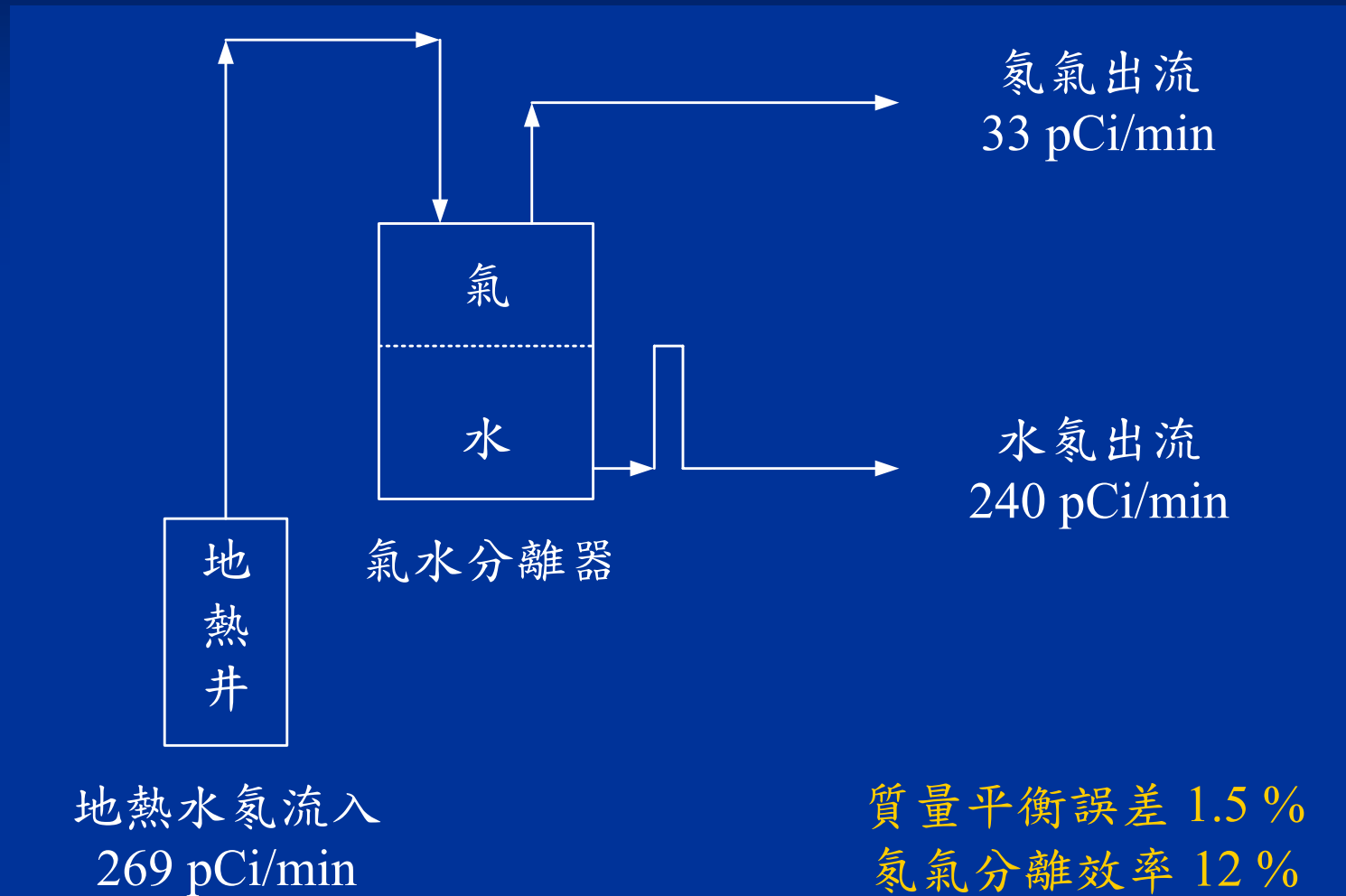


氣氡偵測儀器

# Continuous measurements of vapor-phase radon-222



# Separator efficiency of Antung continuous radon monitoring station





- Material balance calculations indicated that the separation efficiency of radon-222 into the vapor phase was only 12 %.

- With the current facilities at the Antung monitoring station, monitoring radon-222 in the liquid phase before the separator is more appropriate than monitoring radon-222 in the vapor phase after the separator.

*Thank you*

